

Remarks

The Office Action of January 27, 2004, has been carefully considered. In response thereto, claims 14, 22, 23, 39 and 40 have been amended, and new claims 41-43 have been added. Claims 14-28 and 38-43 remain in this application for further prosecution on the merits.

Applicant is grateful for the withdrawal of the Examiner's rejection of claims 14-28 and 38-40 under Double Patenting and §103(a) bases, due to Applicants' argument and submission of a Terminal Disclaimer in response to the last Office Action.

On page 2 of the present Action, claim 22 was rejected under 35 U.S.C. §112, second paragraph, as being indefinite, since it was unclear to the Examiner whether the fibers are aligned unidirectionally or at random. Claim 22 has been amended to require a second group of fibers oriented in a second direction (support at Specification, ¶11, lines 9-10), so as to avoid confusion with the filaments of fiber substantially oriented in at least a first direction, as recited in claim 14. Reconsideration of this rejection pursuant to §112, second paragraph, is respectfully requested.

On page 3 of the Office Action, claims 14, 16-21, 23-25 and 27 were rejected under 35 U.S.C. §102(a), as being anticipated by Serino et al. '197. The Examiner's position with respect to this anticipation rejection is as follows:

Serino discloses a composite structural member that can be used as lumber replacements and structural components such as rails and building materials as per instant claims 14 and 21 (see column 1, lines 5-19). Additionally, Serino discloses the composite comprises fiber-reinforcement and is covered with envelope that contains a polymeric capstock as per instant claims 14 and 17 (see

column 12, lines 28-48 and reference claims 1 and 9). Serino also discloses that the fiber reinforcement has reinforcing fibers that can be glass, carbon or aramid and can be aligned and be in the form of a fabric as per instant claims 14, 19 and 24-25 (see column 12, lines 28-48). It is disclosed in the Serino reference that the fibers are reinforced in a thermoplastic matrix as per instant claim 27 (see column 12, lines 28-50). It is disclosed in the abstract and column 26, lines 5-10 of the Serino reference that the composite is environmentally stable, resist moisture absorption and can form complex shapes as per instant claims 14, 16, 20 and 23. Also, column 10, line 67-column 11, line 2 of the reference discloses that the composite is characterized as outdoor weatherable, UV resistant and has an excellent accommodation of color stability. Claim 20 of the reference discloses that the fiber content is about 20 to 60 weight percent as per instant claim 18.

Independent claims 14 and 23, from which dependent claims 16-21, 25 and 27 depend, have now been amended. Claim 14 now recites a polymer composite building material comprising a composite reinforcement comprising filaments of fibers substantially oriented in at least a first direction *substantially continuously along the entire length of said building material* (support at ¶17, FIG. 12 of Applicants' Specification, *consolidated Twintex rods 19 with continuous glass filaments clearly shown at "end" of product*), and disposed within a *thermoplastic* matrix (support at ¶3, line 26, ¶12 and ¶14 of Applicants' Specification); and a capstock polymeric material disposed substantially over *and in direct contact with* said composite reinforcement (support at FIGS. 3-10 and ¶14 of Applicants' Specification), said building material being resistant to heat deformation and corrosion.

Serino et al. '197 discloses a composite material having a wood member or core 13 with composite end portions 17 joined together with a moisture curing urethane adhesive material 12. Since the Serino et al. '197 composite is multi-pieced or segmented, it fails to disclose filaments of fiber substantially oriented in at least a first direction, which are disposed substantially

continuously along the entire length of said building material. Moreover, since the vinyl envelope of Serino et al. '197 is only applied to the wood member or core 13 and the composite end portion 17 by the adhesive material 12, it is not in direct contact with the wood member or core 13 or composite end portion 17. Applicants' claim 14 requires direct contact between the capstock polymeric material and the composite reinforcement.

Similarly, claim 23 has been amended to include the limitation that the capstock polymeric material is itself adherent to the thermoplastic matrix of the composite reinforcement (support at ¶14 of Applicant's Specification), which also distinguishes over Serino et al. '197, since they require adhesive. Since claims 14 and 23 have been amended to distinguish over Serino et al. '197, their dependent claims 16-21, 22, 25 and 27 now appear to be also patentable over this reference. Reconsideration of the Examiner's rejection under §102(a) in view of Serino et al. '197, is respectfully requested.

On page 4 of the Office Action, claims 14-15, 23, 26, 28 and 38-40 were rejected under 35 U.S.C. §103(a) as being unpatentable over Serino et al. '197 in view of Jambois '412. The Examiner's position is:

Serino discloses a composite structural member that can be used as lumber replacements and structural components such as rails and building materials as per instant claims 14 and 38 (see column 1, lines 5-19). Additionally, Serino discloses the composite comprises fiber-reinforcement and is covered with envelope that contains a polymeric capstock as per instant claims 14 and 38 (see column 12, lines 28-48 and reference claims 1 and 9). Serino also discloses that the fiber reinforcement has reinforcing fibers that can be glass, carbon or aramid and can be aligned and be in the form of a fabric as per instant claims 14 and 38-39 (see column 12, lines 28-48). It is disclosed in the Serino reference that the fibers are reinforced in a thermoplastic matrix as per instant claim 14 and 38 (see column

12, lines 28-50). It is disclosed in the abstract and column 26, lines 5-10 of the Serino reference that the composite is environmentally stable, resist moisture absorption and can form complex shapes as per instant claims 14, 23 and 38. Also, column 10, line 67-column 11, line 2 of the reference discloses that the composite is characterized as outdoor weatherable, UV resistant and has an excellent accommodation of color stability. Serino discloses in column 3, lines 56-68 that the length of the composite can be 3 to 30 cm as per instant claim 28. The Serino reference does not disclose that the capstock has a dark color and the composite reinforcement comprises a pultrusion as per instant claims 15, 26, 28 and 40. Jambois teaches a fiber reinforced plastic component wherein the component can be a pultrusion and is durable and weather resistant (see column 1, lines 14-24). The Jambois reference also teaches that the capstock may have pigments, ultraviolet absorbers or blockers. The dark color of the capstock provides higher thermoresistance. Therefore, it would have been obvious to one of ordinary skill in the art to have a capstock with dark color in order to provide a composite that is weather resistant (see Jambois: column 2, lines 20-28).

The presently amended independent claims 14 and 23, now both require a thermoplastic matrix for the composite reinforcement. Jambois '412 requires a fiber-reinforced thermoset material at its core, which is permitted to cure substantially completely before the application of a coating of another media, such as acrylic (Jambois '412, Col. 4, lines 45-55). In order to bond the acrylic coating to the thermoset surface, the thermoset surface is treated by flame, corona discharge, suppressed spark, or plasma, to create free radicals on the surface for chemically bonding the acrylic to the thermoset surface. Jambois '412 does not teach or suggest the use of a core or composite reinforcement which is, or contains, a thermoplastic matrix, but rather, teaches a thermosetting composite matrix which must be surface treated before it can accept an acrylic coating.

Significantly, Jambois '412 also *teaches away from* the use of thermoplastic matrix cores at col. 2, lines 20-28, and lines 49-54. In this portion of the Background section of the Jambois '412 patent, Jambois states:

A thermoplastic material such as vinyl is extruded through a forming die to form a profile. Typically, a 'cap-stock' having more expensive pigments, ultraviolet absorbers or blockers, a high temperature thermoresistance, etc., is concurrently co-extruded to areas that will require greater protection or need a decorative color. *Such a 'cap-stock' is a similar thermoplastic material or a compatible thermoplastic...*

None of these methods, however, overcomes the limitations as previously discussed. In some cases, the process proves to be unwieldy; in other cases, the final product does not prove to be sufficiently durable and resistant to ultraviolet radiation, etc., other drawbacks are cost and time limitations. (emphasis added)

Jambois clearly relies on a thermoset core matrix as his invention, and teaches the virtues of thermosets over extruding a thermoplastic capstock over a compatible core thermoplastic material. By disparaging Applicants' preferred joining method, Jambois expressly teaches away from one important embodiment of Applicants' invention, and provides objective evidence of its non-obviousness.

Additionally, Jambois does not teach a capstock having a dark color as that claimed by Applicants in claims 15, 38 and 41, but only mentions "pigments" for a "decorative color" (Col. 2, lines 24 and 26). Jambois makes no connection between "color" and weather-resistance. Dark color fence and rail made out of PVC or other polymeric materials have not been successful in the past (§2 of Applicants' Specification). Dark color products show bowing due to difference in expansion and contraction between the two different sides of the product upon

exposure to sunlight. *Id.* In addition, the dark color absorbs heat readily and the resultant uneven heat build-up causes this distortion. *Id.* In view of these “art-recognized” deficiencies associated with dark thermoplastic rail and fence components, one of ordinary skill in the fencing art would not agree with the Examiner that “[t]he dark color of the capstock provides higher thermoresistance”, and would most likely avoid dark colors entirely to avoid distortion and bowing. Accordingly, Applicants’ claims directed to dark color capstocks (claims 14, 15, 16, and 38-43) are neither taught nor suggested by the references of record.

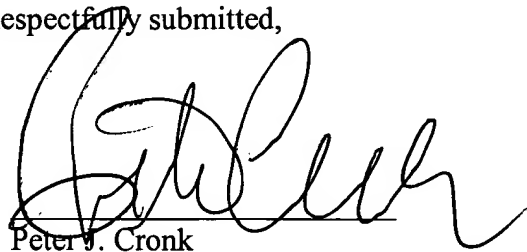
Finally, Applicants note that original claim 38 already required a thermoplastic matrix for the composite reinforcement and a dark color for the capstock. Since there is no teaching in either Serino et al. or Jambois for the combination of these features in a building material, nor any disclosure of a composite reinforcement having a higher tensile strength than aluminum, and Jambois appears to teach away from the use of a thermoplastic matrix in the composite reinforcement, reconsideration of claims 38-40 is also respectfully requested.

Additional claims 41-43 have been added. Claim 41 is directed to a polymer composite ornamental rail or fence having a polymer matrix composite comprising high strength glass filaments disposed substantially continuously along the entire length of the rail or fence component; and a capstock polymeric material having a dark color disposed substantially over and in direct contact with the composite reinforcement. This rail or fence component substantially stabilizes uneven contraction and expansion forces despite a difference in heat build-up on a surface of these components due to sunlight (support in original claim 14, and ¶4 of Applicants Specification). Since claims 41-43 include a “dark color” capstock and “glass

filaments disposed substantially continuously along the entire length", they appear to present patentable subject matter.

In view of the above, reconsideration of the pending claims is respectfully requested and an early Notice of Allowance is earnestly solicited.

Respectfully submitted,



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5-11-04

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